U.S. DEPARTMENT OF ENERGY | Legacy Management

Chariot, Alaska, Site

FACT SHEET

This fact sheet provides information about the Chariot Site. The U.S. Department of Energy Office of Legacy Management is responsible for maintaining records for this site.

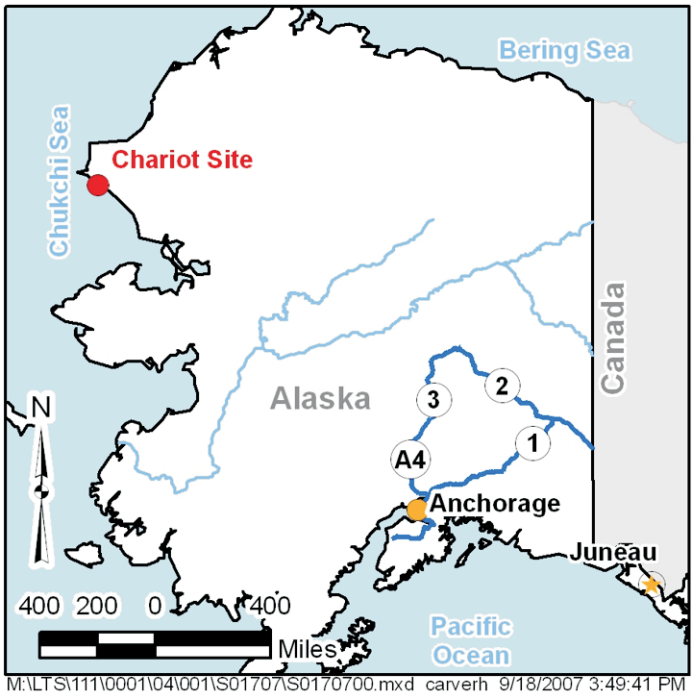
Site Description and History

The U.S. Department of Energy (DOE) conducted remedial action in 1993 to remove remnants of radioactive tracers used in a 1962 experiment at the Project Chariot Tracer Test Site, located in the Ogotoruk Valley in the Cape Thompson region of northwest Alaska. This region is about 125 miles north of the Arctic Circle and is bounded on the southwest by the Chukchi Sea. Because of its remote location, the site is accessible only by air or by sea. High winds, extreme cold, and snow make the site inaccessible during the 9-month winter. The closest populated areas are the Inupiat Eskimo villages of Point Hope, 32 miles northwest of the site, and Kivalina, 41 miles to the southeast. The Inupiats use the Cape Thompson area for subsistence hunting and fishing.

Project Chariot was part of the Plowshare Program created in 1957 by the U.S. Atomic Energy Commission (AEC), a DOE predecessor agency, to study peaceful uses for atomic energy. One aspect of the Plowshare Program was to explore the possibility of using nuclear explosives to excavate a harbor. Project Chariot began in 1958 when a scientific field team chose Cape Thompson as a potential site to develop nuclear excavation technology. AEC, with assistance from other agencies, conducted more than 40 pretest bioenvironmental studies of the Cape Thompson area between 1959 and 1962. The U.S. Geological Survey (USGS) conducted a radioactive tracer experiment from August 20 through 25, 1962, on soils and in a creek at the Chariot Site. AEC suspended Project Chariot in 1962 and ended the associated environmental studies. No nuclear explosive devices were brought to the Chariot Site.

The purpose of the USGS tracer experiment was to evaluate the mobility of radioactive fission products in saturated soils, sediment, and surface water subjected to simulated conditions of rain and runoff. Radioactive soil from an experimental nuclear detonation at the Nevada Test Site was brought to the site for use in test plots that ranged in size from 2 by 2 feet to 5 by 7 feet. The radioactive soil used in the tracer studies was mixed with 15 pounds of native soil and consisted of 6 millicuries (mCi) of cesium-137, 5 mCi of iodine-131, 5 mCi of strontium-85, and 10 mCi of various other isotopes. The test plots were located along and in the vicinity of Snowbank Creek and its confluence with Ogotoruk Creek.

At the conclusion of the tests, tracer-contaminated soil was removed and transported in drums to a nearby area, where it was mixed with native soil. The soils, along with boards and polyethylene sheeting used to enclose and cover the test plots, were covered with about 4 feet of clean soil, which formed a small mound that occupied an area of about 400 square feet. This material remained intact until it was removed in 1993.



Location of the Chariot Site

AEC relinquished the Chariot Site to the Naval Arctic Research Laboratory in 1963. The U.S. Navy used the buildings, airstrips, and improvements at the site as a logistical support base. Naval operations ceased at the site in 1970, and administration was transferred to the U.S. Department of Interior Bureau of Land Management. In 1988, the U.S. Department of Defense approved the site for cleanup under the Defense Environmental Restoration Program for Formerly Used Defense Sites. Remedial action began in 1990 and concluded in 1992. Cleanup included removal of debris, buildings, petroleum containers, and contaminated soils at the base camp site but did not include the contaminated soils mound.

In 1992, a University of Alaska researcher preparing a paper on Project Chariot obtained early 1960s correspondence between AEC and USGS. The letters discussed the use of radioactive tracers at the site and

the radioisotopes that remained after the experiment. The researcher informed the U.S. Army Corps of Engineers and the media of the radioisotopes at the site. The media published the letters, and local residents became concerned that the radioactive materials posed a hazard to human health and the environment.

In response to public concern, the Alaska Department of Environmental Conservation and the U.S. Army Corps of Engineers conducted a site investigation from September 10 through 14, 1992. No surface radioactivity above background levels was identified at the site. Risk assessment reviews performed by the Oak Ridge Institute for Science and Education and the Alaska Department of Health and Social Services concluded that neither the original 1962 levels of radioactivity nor the levels remaining in 1992 posed a risk to human health or the environment. The iodine and strontium radioisotopes had short half-lives (the time required for half the atoms originally present to decay) and were no longer detectable. Only cesium-137, with a half-life of 30 years, and some of the isotopes originally present in much smaller amounts would be expected to have any detectable radioactivity in 1993.

Local residents expressed concern that the radioisotopes from the 1962 study could have entered into the food supply of animals the subsistence hunters depended on for survival. After further consideration, DOE, in consultation with the Alaska Department of Environmental Conservation, determined that a site assessment and removal of any remaining contaminated material at the site was the most cost-effective approach. DOE held public meetings in 1992 and 1993 in Point Hope, Kivalina, Kotzebue, and Barrow to give residents an opportunity to comment on the proposed activities at the Chariot Site.

DOE conducted a site assessment and remedial action between July 29 and September 3, 1993. The assessment included radiometric analyses of surface water, soil, and sediment; tissue analysis of plants and animals in the site area; radiometric ground surveys of the tracer test plots; and an aerial radiometric gamma survey. The purpose of the aerial survey was to determine the natural background radiation in the area and map any potential anomalies that might indicate the presence of man-made radiation.

About 162 cubic yards of soils containing cesium-137 at levels exceeding established cleanup guidelines was excavated from the test plots and soil mound, packaged in metal containers, and shipped to the Nevada Test Site for permanent disposal. The Alaska Department of Environmental Conservation certified the site safe for unrestricted use.

Regulatory Setting

Remediation at the Chariot Site had no precedent for regulatory compliance; the compliance effort began with informal discussions between DOE and the U.S. Army Corps of Engineers, U.S. Fish and Wildlife Service, and the Alaska Division of Governmental Coordination, a state clearinghouse for information and guidance on state environmental regulatory agencies and requirements.

Federal requirements included a Nationwide Permit No. 38, “Cleanup of Hazardous and Toxic Wastes” (Title 33 *Code of Federal Regulations* Part 330) and a permit through Section 404 of the Clean Water Act (Title 33 *United States Code* Section 1344), which regulates discharge of fill materials to waterways to construct stream crossings for equipment and personnel movement. The U.S. Fish and Wildlife Service required Special Use Permits for the site assessment and biological sampling and a Section 810 Subsistence Determination under the Alaska National Interest Lands Conservation Act. The U.S. Fish and Wildlife Service also prepared an Environmental Assessment under the National Environmental Policy Act to evaluate DOE's proposed cleanup.

The state permitting process began with completion of an Alaska Coastal Zone Management Program screening questionnaire to obtain the necessary state permits and approvals. The Alaska Department of Environmental Conservation requested a report describing proposed solid waste management practices at the project site. The Alaska Department of Natural Resources required completion of a risk questionnaire to help identify the level of environmental risk associated with the project, a Tideland Permit Application, and a Land Use Permit Application. The Alaska Department of Fish and Game issued Scientific Permit No. 93-102 for the biological sampling of small mammals, caribou, and ptarmigan.

Legacy Management Activities

Legacy management activities include managing site records and responding to stakeholder inquiries.

Contacts

Site-specific documents related to the Chariot Site are available on the DOE Office of Legacy Management website at http://www.LM.doe.gov/land/sites/ak/chariot/chariot.htm.

For more information about the Chariot Site, contact

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